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*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: MICROFLUIDIC DEVICE FOR CELL SEPARATION AND USES THEREOF

(57) Abstract: The invention features methods for separating cells from a sample (*e.g.*, separating fetal red blood cells from maternal blood). The method begins with the introduction of a sample including cells into one or more microfluidic channels. In one embodiment, the device includes at least two processing steps. For example, a mixture of cells is introduced into a microfluidic channel that selectively allows the passage of a desired type of cell, and the population of cells enriched in the desired type is then introduced into a second microfluidic channel that allows the passage of the desired cell to produce a population of cells further enriched in the desired type. The selection of cells is based on a property of the cells in the mixture, for example, size, shape, deformability, surface characteristics (*e.g.*, cell surface receptors or antigens and membrane permeability), or intracellular properties (*e.g.*, expression of a particular enzyme).

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A01N 1/02; C12M 1/00, 1/34, 3/00; C12N 5/00, 5/02, 5/06, 5/10

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/2, 283.1, 288.6, 325, 355

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,E	US 6,344,326 B1 (NELSON et al) 05 February 2002, column 21, lines 40-52 and lines 55-65, column 22, all lines and see abstract.	1-67
Y	US 6,074,827 A (NELSON et al) 13 June 2000, columns 1-9, all lines and abstract.	1-67
Y	US 6,432,630 B1 (BLANKENSTEIN) 13 August 2002, column 3, all lines and abstract.	1-67
Y	US2002/0115201 A1 (BARENBURG et al) 22 August 2002, column 10, all lines and abstract.	1-67
Y,E	US 6,632,619 B1 (HARRISON et al) 14 October 2003, columns 2-4, all lines and abstract.	1-67
Y	US 6,613,525 B2 (NELSON et al) 02 September 2003, columns 27-28, all lines and abstract.	1-67
Y	US 6,361,958 B1 (SHICH et al) 26 March 2002, columns 2-4, all lines and abstract.	1-67
Y	US 6,007,690 A (NELSON) et al 28 December 1999, column 20, all lines, column 21, lines 1-15, and abstract.	1-67
Y,p	US 6,529,835 B1 (WADA et al), columns 16-21 04 March 2003, all lines and abstract.	1-67



Further documents are listed in the continuation of Box C.



See patent family annex.

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Continuation of B. FIELDS SEARCHED Item 3:

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